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DIGITAL CASSETTE RECORDER

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LS-DR DIGITAL CASSETTE RECORDER

OPERATORS MANUAL

INTRODUCTION

This manual describes the three levels of operation for the LS-DR Digital Cassette Recorder. Level I controls saving one file to the tape, Level II can handle up to 16 files each having a maximum length of 2K bytes, and Level III is a directory system for basic that saves multiple sector files using a four character alphanumeric name.

Levels I and II are operated from either the keypad or a CRT terminal. Level III (like Basic) requires a CRT terminal. Operation is enhanced by using the "PDC" Peripheral Data Controller, but it is not required.

To simplify this discussion the following terms are defined:

"Switch to Tape" --- Switch the "PDC" to the tape position, or unplug the CRT cable from the CPU and then plug the tape cable into the CPU. This is done during a 12 second software delay. The current baud rate is saved and the ACIA is automatically set to 8-bit data and 9600 Baud for the tape.

"Wait for Tape" Wait for tape to rewind and stop on the clear leader at the beginning of the tape.

"Switch to CRT" Switch the "PDC" to the CRT position, or unplug the tape cable from the CPU and then plus the CRT cable into the CPU. This is also done during a 12 second software delay. The ACIA and Baud rate are automatically restored to their previous state.

The instructions "Switch to Tape" and "Switch to CRT" can be ignored when using the System X keypad, since the tape can remain connected to the CPU card.

Caution must be exercised when switching from tape to CRT. If the switch is made during a write sequence the recorder could continue to encode the clock signal onto the tape and the formal would be destroyed

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OPERATION OF THE LS-DR DIGITAL CASSETTE RECORDER

LEVEL I

DIRECTORY SYSTEM FOR MACHINE LANGUAGE

HARDWARE REQUIREMENTS:

SYSTEM X WITH T68BUG MONITOR (VERSION 4.1)
LS-DR DIGITAL CASSETTE RECORDER
CABLE - TAPE TO CPU (OR PDC)
* (See below)

OPTIONAL EQUIPMENT:

"PDC" PERIPHERAL DATA CONTROLLER
CRT TERMINAL
CABLE - CRT TO CPU

The Level I software comes standard with the T68BUG monitor (version 4.1) and will save one file of up to 64K bytes to the tape. The punch and load operations are activated directly by the function keys (PNCH) AND (LOAD).

PUNCH

This function saves a file in memory on the tape:

PRESS "PUNCH" (KEY 8)	
BE- _ _ _	ENTER THE BEGINNING ADDRESS.
EN- _ _ _	ENTER THE END ADDRESS.
"SWITCH TO TAPE"	(12 SECOND DELAY)
"WAIT FOR TAPE"	
"SWITCH TO CRT"	(12 SECOND DELAY)
"DONE" OR "BAD"	MESSAGE DISPLAYED WHEN FINISHED.

LOAD

This function loads a file on tape into memory:

PRESS "LOAD" (KEY 9)	
LOAD	
"SWITCH TO TAPE"	(12 SECOND DELAY)
"WAIT FOR TAPE"	
"SWITCH TO CRT"	(12 SECOND DELAY)
"GOOD" OR "BAD"	MESSAGE DISPLAYED WHEN FINISHED.

* Level I is used if System X does not have the T68TAPE Prom (File Management) Chip. To check for Prom, look at socket IC18 on CPU Board (see page 22 of User's Manual). If Prom is there go to Level II.

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OPERATION OF THE LS-DR DIGITAL CASSETTE RECORDER

LEVEL II

DIRECTORY SYSTEM FOR MACHINE LANGUAGE

HARDWARE REQUIREMENTS:

SYSTEM X WITH T68BUG MONITOR (VERSION 4.1)
T68TAPE PROM
LS-DR DIGITAL CASSETTE RECORDER
CABLE - TAPE TO CPU (PDC)

OPTIONAL EQUIPMENT:

"PDC" PERIPHERAL DATA CONTROLLER
CRT TERMINAL
CABLE - CRT TO CPU

The Level II software allows saving 255 files of up to 2K bytes each by FILE NUMBER. With the T68TAPE accessory prom in the $F000 socket, the monitor function keys (load) and (punch) initiate the menu functions 1 and 2 below. Typing "FF" for the file number aborts to the menu where all four choices are available.

MENU

0-BUG	RETURN TO T68 BUG
1-LOAD	LOAD FILE FROM TAPE TO MEMORY
2-PUNCH	SAVE FILE TO TAPE FROM MEMORY
3-FORMAT	FORMAT THE TAPE INTO SECTORS

****
* THE TAPE MUST BE FORMATTED PRIOR TO SAVING A FILE *
****

NOTE: The promburner load routine (version 2.00 will load Level II programs when the T68TAPE accessory prom is in place at $F000.

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0-BUG
Use this function to return to T68BUG. The message "ACSI UP" is displayed to indicate the monitor command mode.

1-LOAD
This function reads a file on the tape into memory:

PRESS (LOAD)	(IF IN T68BUG)
OR	
PRESS (1)	(IF AT MENU)
FILE-_ _	ENTER 2 DIGIT FILE NUMBER 01 TO 0F, OR ENTER "FF" TO ABORT TO MENU.
OF- _ _	ENTER LOAD OFFSET (NORMALLY 0000).
"SWITCH TO TAPE"	(12 SECOND DELAY)
"WAIT FOR TAPE"	
"SWITCH TO CRT"	(12 SECOND DELAY)
"GOOD OR "BAD"	MESSAGE DISPLAYED WHEN DONE.

2-PUNCH
This function saves a file in memory to the tape:

PRESS (PUNCH)	(IF IN T68BUG)
OR	
PRESS (2)	(IF AT MENU)
FILE-_ _	ENTER 2 DIGIT FILE NUMBER 01 TO 0F, OR ENTER "FF" TO ABORT TO MENU.
BE- _ _	ENTER BEGINNING ADDRESS.
EN- _ _	ENTER END ADDRESS.
"SWITCH TO TAPE"	(12 SECOND DELAY)
"WAIT FOR TAPE"	
"SWITCH TO CRT"	(12 SECOND DELAY)
"DONE" OR "BAD"	MESSAGE DISPLAYED WHEN DONE.

3-FORMAT
This function formats the tape:

PRESS<3>	(FROM MENU)
SURE?	PRESS <1> TO CONTINUE.
"SWITCH TO TAPE"	(12 SECOND DELAY)
"WAIT FOR TAPE"	
"SWITCH TO CRT"	(12 SECOND DELAY)
"DONE" OR "BAD"	MESSAGE DISPLAYED WHEN DONE.

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OPERATION OF THE LS-DR DIGITAL CASSETTE RECORDER

LEVEL III FOR BASIC FILES ONLY

DIRECTORY SYSTEM FOR BASIC

HARDWARE REQUIREMENTS:

SYSTEM X WITH T68BUG MONITOR (VERSION 4.1)
LS-DR DIGITAL CASSETTE RECORDER
T68TAPE PROM
BASIC PROMS (VERSION 1.2)
CRT TERMINAL
CABLE - CRT TO CPU
CABLE - TAPE TO PDC (OR CPU)

OPTIONAL HARDWARE:

"PDC" PERIPHERAL DATA CONTROLLER

The Level III directory system for basic handles up to 15 files by name. The following commands are available:

MENU

0 - BASIC	RETURN TO BASIC.
1 - LOOK	LOOK AT DIRECTORY (IN RAM)
2 - DIR	READ DIRECTORY INTO RAM AND DISPLAY IT.
3 - LOAD	LOAD FILE FROM TAPE INTO MEMORY.
4 - SAVE	SAVE FILE IN MEMORY TO TAPE.
5 - DELETE	DELETE A FILE FROM THE TAPE.
6 - FORMAT	FORMAT THE TAPE WITH A DIRECTORY.

With the T68TAPE accessory prom inserted at $F000 in the CPU card, the normal "SAVE" and "LOAD" commands executed from basic bypass the Menu, unless <CONTROL Z> is pressed for the file name, in which case the Menu is displayed and all seven commands become available.

****
* THE TAPE MUST BE FORMATTED PRIOR TO SAVING A FILE *
****

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0-BASIC
This function returns you to Basic. The "Ready" message is displayed to indicate the command mode in Basic.

1-LOOK
This function displays the directory if it has already been read into memory (functions 2 through 6 read the directory into RAM).

FROM THE MENU PRESS <1>
The directory is printed immediately as follows:

```
NAME-NNNN XXXX    TAPE NAME AND TOTAL SECTOR BITMAP.
FFFF YYYY         FILE NAME AND BITMAP OF SECTORS USED.
FFFF YYYY         FILE NAME AND BITMAP OF SECTORS USED.
FFFF YYYY         FILE NAME AND BITMAP OF SECTORS USED.
  "    "                      "
```

"NNNN" is the name typed when the tape was formatted. The total number of sectors currently being used are represented by the number of bits set to one in the number "xxxx". The first sector is reserved for the directory (BIT $8000).

The file names "FFFF" and their corresponding bitmaps "YYYY" are listed in order. The bitmap "YYYY" indicate which sectors are used by the file.

2-DIR

This function reads the directory into ram before executing the "LOOK" function defined above.

FROM THE MENU PRESS <2>

"SWITCH TO TAPE"	12 SECOND DELAY
"WAIT FOR TAPE"	
"SWITCH TO CRT"	12 SECOND DELAY
"GOOD" OR "BAD"	MESSAGE PRINTED WHEN FINISHED.

THE DIRECTORY IS PRINTED THE SAME AS ABOVE.

3-LOAD
This function loads a file into memory from the tape.

TYPE "LOAD<CR>"	(IF IN BASIC)
OR	
TYPE<3>	(IF AT MENU)
FILE-_ _ _<CR>	ENTER 4 CHARACTER ALPHA-NUMERIC NAME SELECTED FROM DIRECTORY, OR TYPE <CONTROL Z> TO ABORT TO MENU.
"SWITCH TO TAPE"	12 SECOND DELAY
"WAIT FOR TAPE"	
"SWITCH TO CRT"	12 SECOND DELAY.
"GOOD" OR "BAD"	MESSAGE PRINTED WHEN FINISHED.

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4-SAVE
This function saves a file in memory to the tape. If the file already exists the new one is saved to a temporary file before the old one is deleted.

TYPE "SAVE<CR>"	(IF IN BASIC)
OR	
TYPE<4>	
FILE- _ _ _<CR>	(IF AT MENU) TYPE 4 CHARACTER ALPHA-NUMBERIC NAME OF FILE TO BE SAVED, OR TYPE<CONTROL Z> TO ABORT TO THE MENU).
"DONE" OR "BAD"	MESSAGE PRINTED WHEN FINISHED.

5-DELETE
This function deletes a file from the directory.

TYPE<5>	(FROM THE MENU)
SURE?	PRESS<1> TO CONTINUE.
FILE- _ _ _<CR>	ENTER FOUR CHARACTER ALPHA-NUMERIC NAME OF FILE TO BE DELETED, OR TYPE <CONTROL Z> TO ABORT TO MENU.
"SWITCH TO TAPE"	12 SECOND DELAY
"WAIT FOR TAPE"	
"SWITCH TO CRT"	12 SECOND DELAY

6-FORMAT
This function formats the tape for the directory system.

TYPE<6>	(FROM THE MENU)
SURE?	PRESS<1> TO CONTINUE.
NAME-_ _ _<CR>	ENTER FOUR CHARACTER TAPE NAME. <CONTROL Z> WILL ABORT TO THE MENU.
"SWITCH TO TAPE"	12 SECOND DELAY
"WAIT FOR TAPE"	
"SWITCH TO CRT"	12 SECOND DELAY

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